Complete Summary

GUIDELINE TITLE

Glycemic control and type 2 diabetes mellitus: the optimal hemoglobin A1c targets. A guidance statement from the American College of Physicians.

BIBLIOGRAPHIC SOURCE(S)

Qaseem A, Vijan S, Snow V, Cross JT, Weiss KB, Owens DK, Clinical Efficacy Assessment Subcommittee of the American College of Physicians. Glycemic control and type 2 diabetes mellitus: the optimal hemoglobin A1c targets. A guidance statement from the American College of Physicians. Ann Intern Med 2007 Sep 18;147(6):417-22. PubMed

GUIDELINE STATUS

This is the current release of the guideline.

COMPLETE SUMMARY CONTENT

SCOPE

DISEASE/CONDITION(S)

Type 2 diabetes mellitus

GUIDELINE CATEGORY

Management
Risk Assessment
Treatment

CLINICAL SPECIALTY

Endocrinology
Family Practice
Geriatrics
Internal Medicine
Pediatrics

INTENDED USERS

Physicians

GUIDELINE OBJECTIVE(S)

To present the available guidelines from various organizations to help internists and other primary care physicians with effective management for glycemic control in type 2 diabetes mellitus and target level for hemoglobin A_{1c}

TARGET POPULATION

All patients with type 2 diabetes

INTERVENTIONS AND PRACTICES CONSIDERED

1. Individualized treatment goals based on discussion of benefits and harms of specific levels of glycemic control
2. Individualized risk assessment

MAJOR OUTCOMES CONSIDERED

Not stated

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

Note: This guidance statement is derived from other organizations' guidelines and is based on an evaluation of the strengths and weakness of the available guidelines.

The guideline authors began by searching MEDLINE in February 2005 using the keyword *diabetes*, limited to guideline. This produced 416 articles. The authors then supplemented this by searching the National Guideline Clearinghouse for guidelines on diabetes. The authors reviewed the titles and abstracts of each document. Most of these articles did not address glycemic control (many were on such topics as screening, diagnosis of diabetes, or management of hypertension). The authors also excluded primary research studies, duplicate references, and outdated references (for example, the American Diabetes Association's standards

of care are updated annually, so they used only the most recent guideline). They excluded articles that were not in English because of the extensive resources needed for the translation (another 8 to 12 references; the number varied because there were duplicate publications of some guidelines). The authors also excluded the University of Michigan guidelines because an author of the current manuscript was the team leader for those guidelines. Finally, several guidelines (typically those produced by individual U.S. states) were excluded because they were explicit adoptions of other guidelines, most often those of the American Diabetes Association. They updated the search in May 2006, discovering 12 new citations, but other than an update to 1 guideline, they did not identify any new relevant guidelines.

NUMBER OF SOURCE DOCUMENTS

9 guidelines were identified by the committee.

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Weighting According to a Rating Scheme (Scheme Given)

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

The guideline authors utilized the Appraisal of Guidelines, Research and Evaluation in Europe (AGREE) collaboration Instrument along with the Guideline Evaluation Criteria to evaluate the identified guidelines. Readers are referred to the original guideline document for more information on the use of these instruments.

Guideline Evaluation Criteria*

Primary Criterion

- There is an explicit link between the recommendations and the supporting evidence (AGREE instrument Q12).

Secondary Criteria

- Systematic methods were used to search for evidence (AGREE instrument Q8).
- The criteria for selecting the evidence are clearly described (AGREE instrument Q9).
- The methods used for formulating the recommendations are clearly described (AGREE instrument Q10).
- The recommendations are specific and unambiguous (AGREE instrument Q15).
- The guideline has been externally reviewed by experts prior to its publication (AGREE instrument Q13).
- There are explicit quality criteria used to grade the evidence and recommendations (CEAS criteria).
- The quality criteria used by the authors to grade the evidence and recommendations are satisfactory (CEAS criteria).

- There is no identifiable bias that might have influenced the selection of evidence (CEAS criteria).
- Are the recommendations based on evidence only from randomized, controlled trials? (CEAS criteria).
- Is another form of evidence used in the recommendations (e.g., consensus statements, cohort studies, case–control studies?) (CEAS criteria).
- The methods used to combine the results from the relevant literature are clearly described and reported (CEAS criteria).
- The authors used satisfactory meta-analytic techniques in the evidence review (CEAS criteria).

Tertiary Criterion

- It meets all criteria, in particular good methods and good evidence (CEAS criteria).

*AGREE = Appraisal of Guidelines, Research, and Evaluation in Europe; CEAS = Clinical Efficacy Assessment Subcommittee of the American College of Physicians; Q = question.

METHODS USED TO ANALYZE THE EVIDENCE

Systematic Review

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

The Appraisal of Guidelines, Research and Evaluation in Europe (AGREE) instrument asks 23 questions in 6 domains: scope and purpose, stakeholder involvement, rigor of development, clarity and presentation, applicability, and editorial independence. Each guideline is scored by using a simple additive metric. Before conducting the evaluation, members of the guiding team from the American College of Physicians and the authors agreed on a method of stratifying the ratings into 3 main categories; these criteria are outlined in Table 1 in the original guideline document (see also the "Rating Scheme for the Strength of the Evidence" field). They did not weigh scores according to these 3 categories but note their findings in their overall qualitative assessment of the guidelines as discussed here. Specifically, they viewed a lack of an explicit link between evidence and recommendations as a major flaw. A second tier of criteria included whether the authors performed a systematic search, used explicit criteria for selecting evidence, and described methods for formulating recommendations. The remaining AGREE criteria were considered as part of the overall score (see Tables 1 and 2 in the original guideline document).

The guideline authors obtained copies of the identified guidelines if they were available to the general public, either electronically or through publication in medical journals. These guidelines were reviewed independently by 2 reviewers using the AGREE method, with a focus on the 3 major categories that were viewed as important by the Clinical Efficacy Assessment Subcommittee (CEAS). Each guideline was scored; scores were tabulated across the domains of interest and were compared (Table 2 in the original guideline document). Although total quantitative scores varied somewhat, the qualitative assessment of guideline quality was highly consistent between the 2 reviewers; indeed, the overall rankings of the quality of the guidelines were nearly identical.

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Expert Consensus

DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS

The American College of Physicians (ACP) Clinical Efficacy Assessment Subcommittee (CEAS) made a policy decision to address the clinical topic areas designated by the Institute of Medicine (IOM) as priorities for improvement in their quality chasm report and their priorities report. In the case of an IOM priority area where multiple guidelines are available from many reputable organizations, the CEAS decided to use a different methodological approach rather than develop another guideline on the topic. The CEAS felt that it would be more useful to provide clinicians with a rigorous review of the currently available guidelines so that they could make evidence-based care decisions. Glycemic control in diabetes mellitus was a priority area cited in the IOM report, and it is currently also a high-priority target of many pay-for-performance and pay-for-reporting programs throughout the United States. Thus, the CEAS developed this guidance statement for our members to address the evidence base for needed improvements of glycemic control in diabetes mellitus and how implementation of evidence-based guidelines can help improve the care they deliver.

Guidelines were parsed for specific recommendations relating to glycemic control (most of the guidelines encompassed a broad range of diabetes management recommendations, rather than focusing on glycemic control alone). Specific comments relating to decisions about glycemic management goals were recorded to generate an assessment of how these goals varied across guidelines. Recommendations were based on the level of evidence supporting the recommendations along with the overall quality of the guideline (see the "Description of Methods Used to Analyze the Evidence" field).

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Not applicable

COST ANALYSIS

A formal cost analysis was not performed and published cost analyses were not reviewed.

METHOD OF GUIDELINE VALIDATION

External Peer Review
Internal Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

Approved by the American College of Physicians Board of Regents on 28 October 2006.

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

On the basis of the review of the available guidelines, the American College of Physicians Clinical Efficacy Assessment Subcommittee recommends the following:

Statement 1*: To prevent microvascular complications of diabetes, the goal for glycemic control should be as low as is feasible without undue risk for adverse events or an unacceptable burden on patients. Treatment goals should be based on a discussion of the benefits and harms of specific levels of glycemic control with the patient. A hemoglobin A1c level less than 7% based on individualized assessment is a reasonable goal for many but not all patients.*

The goals for glycemic control should be as low as is feasible without undue risk for adverse events, such as hypoglycemia. Clinicians should counsel patients and emphasize the importance of good glycemic control. Clinicians should discuss treatment goals with each patient and agree jointly on goals that are feasible, given the patient's comorbid conditions, preferences, and ability to manage the treatment regimen. Therapy in many patients should be targeted to achieve a hemoglobin A1c value less than 7% to reduce the risk for complications from diabetes. However, this goal will not be appropriate for all patients. In patients who are older or frail, at increased risk for adverse complications from tight control, or have substantially reduced life expectancy from comorbid conditions, hemoglobin A1c goals higher than 7% may be appropriate. In patients who are at increased risk for microvascular complications, stringent targets may be appropriate.

Statement 2*: The goal for hemoglobin A1c level should be based on individualized assessment of risk for complications from diabetes, comorbidity, life expectancy, and patient preferences.*

With consideration of the importance of glycemic control, the goals for glycemic control should be individualized on the basis of the life expectancy of the patient, presence or absence of microvascular and macrovascular complications, risk for adverse events related to glucose control, and patient preferences. Less stringent targets may be appropriate in patients who have short life expectancy or are at higher risk for adverse complications of therapy.

Refer to the original guideline document for recommendations for future research.

CLINICAL ALGORITHM(S)

None provided

EVIDENCE SUPPORTING THE RECOMMENDATIONS

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

This guidance statement is derived from other organizations' guidelines and is based on an evaluation of strengths and weaknesses of the available guidelines.

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

Effective, individualized management of glycemic control in type 2 diabetes

POTENTIAL HARMS

Not stated

QUALIFYING STATEMENTS

QUALIFYING STATEMENTS

Guidance statements are guides only and may not apply to all patients and all clinical situations. Thus, they are not intended to override clinicians' judgment.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

An implementation strategy was not provided.

IMPLEMENTATION TOOLS

Patient Resources

For information about availability, see the "Availability of Companion Documents" and "Patient Resources" fields below.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Living with Illness

IOM DOMAIN

Effectiveness
Patient-centeredness

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

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ADAPTATION

Not applicable: The guideline was not adapted from another source.

DATE RELEASED

2007 Sep

GUIDELINE DEVELOPER(S)

American College of Physicians - Medical Specialty Society

SOURCE(S) OF FUNDING

American College of Physicians

GUIDELINE COMMITTEE

Clinical Efficacy Assessment Subcommittee of the American College of Physicians

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

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FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

Potential Conflicts of Interest

Grants received: V. Snow (Agency for Healthcare Research and Quality, Centers for Disease Control and Prevention, Novo Nordisk, Bristol-Myers Squibb, Pfizer Inc., Merck Pharmaceuticals)

Receipt of payment for manuscript preparation: S. Vijan (American College of Physicians)

GUIDELINE STATUS

This is the current release of the guideline.

GUIDELINE AVAILABILITY

Electronic copies: Available from the Annals of Internal Medicine Web site.

Print copies: Available from the American College of Physicians (ACP), 190 N. Independence Mall West, Philadelphia PA 19106-1572.

AVAILABILITY OF COMPANION DOCUMENTS

None available

PATIENT RESOURCES

The following is available:

- Control of blood sugar in type 2 diabetes: a guidance statement from the American College of Physicians. Ann Int Med 2007 Sep 18;147(6):I-52. Electronic copies: Available from the Annals of Internal Medicine Web site.

Print copies: Available from the American College of Physicians (ACP), 190 N. Independence Mall West, Philadelphia PA 19106-1572.

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NGC STATUS

This NGC summary was completed by ECRI Institute on October 9, 2007. The information was verified by the guideline developer on June 2, 2008.

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